REMARKS/ARGUMENTS

Claims

Claims 1-6, 8-14, 16, 18, 20-26 and 31-40 are currently pending in this application. Claims 1, 16, 18, 20, 21, 26, 31, 37, and 38 are currently amended. Claims 39 and 40 are new. Claim 1 has been amended to more clearly claim the interface. Claims 16 and 31 have been amended to conform to the amendments of Claim 1. Claim 18 has been amended to clarify the determining step. Claims 20, 21, 26, 37, and 38 have been amended to conform to the amendments of Claim 18. No new matter has been introduced by the amendments to the claims or by the new claims.

REJECTIONS UNDER 35 U.S.C. §103

Claims 1-6, 8-14, 16, 18, 20-26 and 31-38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Borkar* et al., "iWarp: An Integrated Solution to High-Speed Parallel Computing" (Hereinafter *Borkar*) in view of *Barat* et al., "Reconfigurable Instruction Set Processors: A Survey" (Hereinafter *Barat*). The Applicants respectfully traverse these rejections.

Claim 1

Borkar and *Barat*, individually and in combination, do not teach all the elements of amended Claim 1. *Borkar* discloses an "iWarp" system of iWarp cells. Multiple iWarp cells are connected in an array of cells or nodes. For example, nine iWarp cells may be connected to each other in a three by three torus array. (see Figure 5 of *Borkar*.) Each iWarp cell includes an iWarp component, a local memory, and ports.

The iWarp component includes a computational processor for executing applications and a communications engine. The ports and local memory are two separate devices that an iWarp cell uses for communication between the iWarp component and external devices. The iWarp component communicates via the ports with other iWarp cells. The iWarp component communicates via the local memory with peripherals such as standard buses, disks, graphics devices and sensors.

The present invention includes a processor and communication interface. The communication interface uses a selector module for communicating with either another processor node or an input/output device. The selector module selects between an array interface module when communicating with the processor node and a standard input/output interface when communicating with the input/output device. Both the array interface module and the standard input/output interface communicate via the selector module.

Amended Claim 1 recites in part:

> *a first communication interface including*
>
> *a first selector module configured to communicate with a first other member of the plurality of processor nodes or communicate with a first input/output device,*
>
> *a first array interface module configured to communicate with the first other member of the plurality of processor nodes via the first selector module,*
>
> *a first standard input/output interface configured to communicate with the first input/output device via the first selector module, the first selector module further configured to select between the first array interface module and the first standard input/output interface,*

The iWarp component described in *Borkar* is a processor that communicates with other iWarp cells via the ports and communicates with peripherals via the local memory device. "[T]he iWarp cell's connection with

peripherals uses the local memory, while its intercell connection uses ports of iWarp." (*Borkar*, Section 2.2, third paragraph.)

However, the ports communicate directly other iWarp cells rather than via a selector module. Thus, there is no teaching or suggestion in *Borkar* of "*a first array interface module configured to communicate with the first other member of the plurality of processor nodes via the first selector module,*" as recited in amended Claim 1.

Likewise, the local memory of the iWarp communicates directly with the peripherals, not via a selector module. Thus, there is no teaching or suggestion in *Borkar* of "*a first standard input/output interface configured to communicate with the first input/output device via the first selector module,*" as recited in amended Claim 1.

Further, there is no disclosure in *Borkar* of a selector module that also selects between the ports and the local memory. Thus, there is no teaching or suggestion in *Borkar* of a selector module that is "*configured to select between the first array interface module and the first standard input/output interface,*" as recited in amended Claim 1.

Barat discloses "reconfigurable instruction set processors [that] have the capability to adapt their instructions sets to the application being executed through a reconfiguration in their hardware." (*Barat*, abstract) However, *Barat* does not teach an array of processors, an interface between a processors and another processor, or an interface between a processor and a peripheral device. Thus, *Barat* does not teach or suggest "*a first selector module,*" "*a first array interface module,*" or "*a standard input/output interface*" as recited in amended Claim 1. Therefore, *Borkar* and *Barat*, individually and in combination, do not teach all the elements of amended Claim 1.

For at least the above reasons, the Applicants believe that amended Claim 1 is allowable. Applicants also believe that Claims 2-6, 8-14, 16, and 31-36 are

allowable for at least the reasons discussed with respect to amended Claim 1, from which they depend.

Claim 18

The Applicants repeat the arguments set forth above with respect to amended Claim 1 regarding the communication interface including the selector module, the array interface module, and the standard input/output interface of amended Claim 18. Amended Claim 18 further recites "*determining if the neighboring device is a member of the plurality of processor nodes or is a not a member of the plurality of processor nodes.*"

The Examiner has noted that "a given iWarp cell has ability to communicate with neighboring devices that include iWarp cells and other peripheral devices. Depending on which neighboring device the iWarp cell wants to communicate with, the cell communicates using either the communication agent (in the case that the neighboring device is an iWarp cell) or the local memory peripheral interface (in the case that the neighboring device is not an iWarp cell) [section 2.2] Therefore, the iWarp cell must make a determination whether the neighboring device that it wants to communicate with is a member of the plurality of processing nodes (i.e. iWarp cells)." (Office Action, p. 11, paragraph 39.)

The Applicants respectfully submit that the Examiner has incorrectly characterized Claim 18. The Examiner seems to be interpreting the step of determining the type of a device next to the iWarp as equivalent to determining which device the iWarp wants to direct communication to rather than determining which device the iWarp is already in communication with.

First, the Examiner describes a case where the iWarp determines that it "wants to communicate with" another iWarp and therefore "must make a

determination whether the neighboring device that it wants to communicate with is a member of the plurality of processing nodes." However, all the neighboring devices in *Borkar* are iWarp cells. "The iWarp cell's connection with peripherals uses the local memory, while its intercell connection uses ports of iWarp. Since these two functions use different physical resources of the iWarp cell, they can be implemented in-dependently from each other." (*Borkar*, Section 2.2, last paragraph.) Therefore, there is no need to determine what the neighboring device is since the iWarp component already has that information. Thus, there is no teaching or suggestion in *Borkar* of "*determining if the neighboring device is a member of the plurality of processor nodes*," as recited in amended Claim 18.

Second, since there is no neighboring device that is not an iWarp cell, the iWarp component cannot determine "*if the neighboring device . . . is a not a member of the plurality of processor nodes*," as recited in amended Claim 18.

Claim 18 has been amended to include additional limitations of conditioning the choice of communication module on the determination of the type of neighboring device. Claim 18 further recites in part:

> *if the neighboring device is a member of the plurality of processor nodes, selecting the array interface module for communicating to the neighboring device via the selector module; and*
>
> *if the neighboring device is not a member of the plurality of processor nodes, selecting the standard input/output interface for communicating to the neighboring device via the selector module.*

Borkar always uses ports to communicate with neighboring devices since all neighboring devices are iWarps. Thus, there is no teaching or suggestion in *Borkar* that "*if the neighboring device is a member of the plurality of processor nodes, selecting the array interface module for communicating to the neighboring device via the*

selector module," as recited in amended Claim 18. Moreover, there is no reason to make such a selection since the neighboring device is always another iWarp.

Further, since there is no neighboring device that is not an iWarp cell, there can be no teaching or suggestion in *Borkar* that "*if the neighboring device is not a member of the plurality of processor nodes, selecting the standard input/output interface for communicating to the neighboring device via the selector module*," as recited in amended Claim 18.

For at least the above reasons, the Applicants believe that amended Claim 18 is allowable. Applicants also believe that Claims 20-26 and 32-40 are allowable for at least the reasons discussed with respect to amended Claim 18 from which they depend.

New Claims 39 and 40

Support may be found for the limitations of new Claims 39 and 40 in the specification, for example, in paragraph 82 and FIG. 9 of the specification as originally filed. Applicants believe that new Claims 39 and 40 are allowable over the applied references for at least the same reasons that amended Claim 18 from which they depend is allowable.

Applicants believe that all pending claims are allowable and respectfully requests that the Examiner issue a Notice of Allowance. Should the Examiner have questions, Applicants' undersigned representative may be reached at the number provided below.

Respectfully submitted,

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